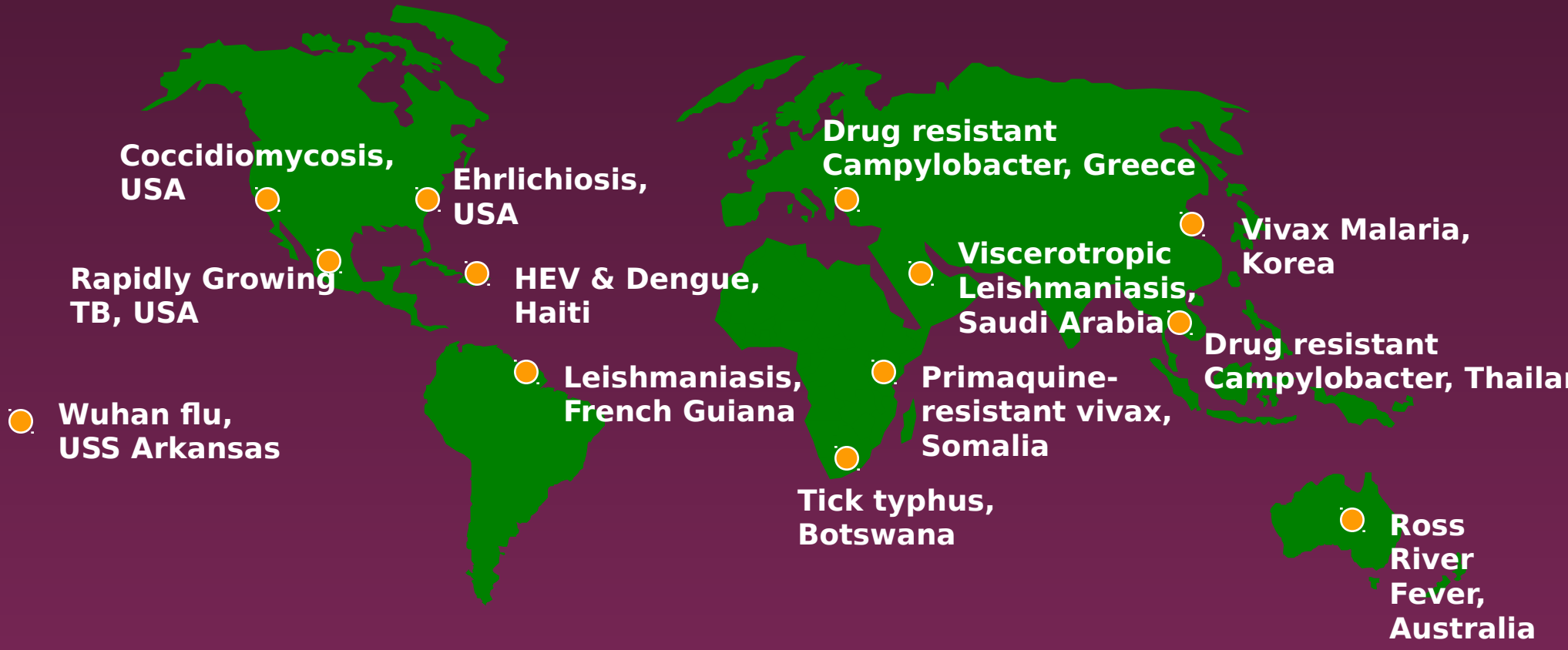
DoD Global Emerging Infections Surveillance and Response

A Presidentially-directed joint service program to facilitate early recognition and control of new disease problems that threaten national security

COL Patrick Kelley, MD, DrPH
Director, DoD Global Emerging Infections Surveillance and Response Program

What Are Emerging Infectious Diseases (EID)?

Emerging infectious diseases are infectious diseases that have recently become more prevalent or threaten to do so. Recent military examples include:

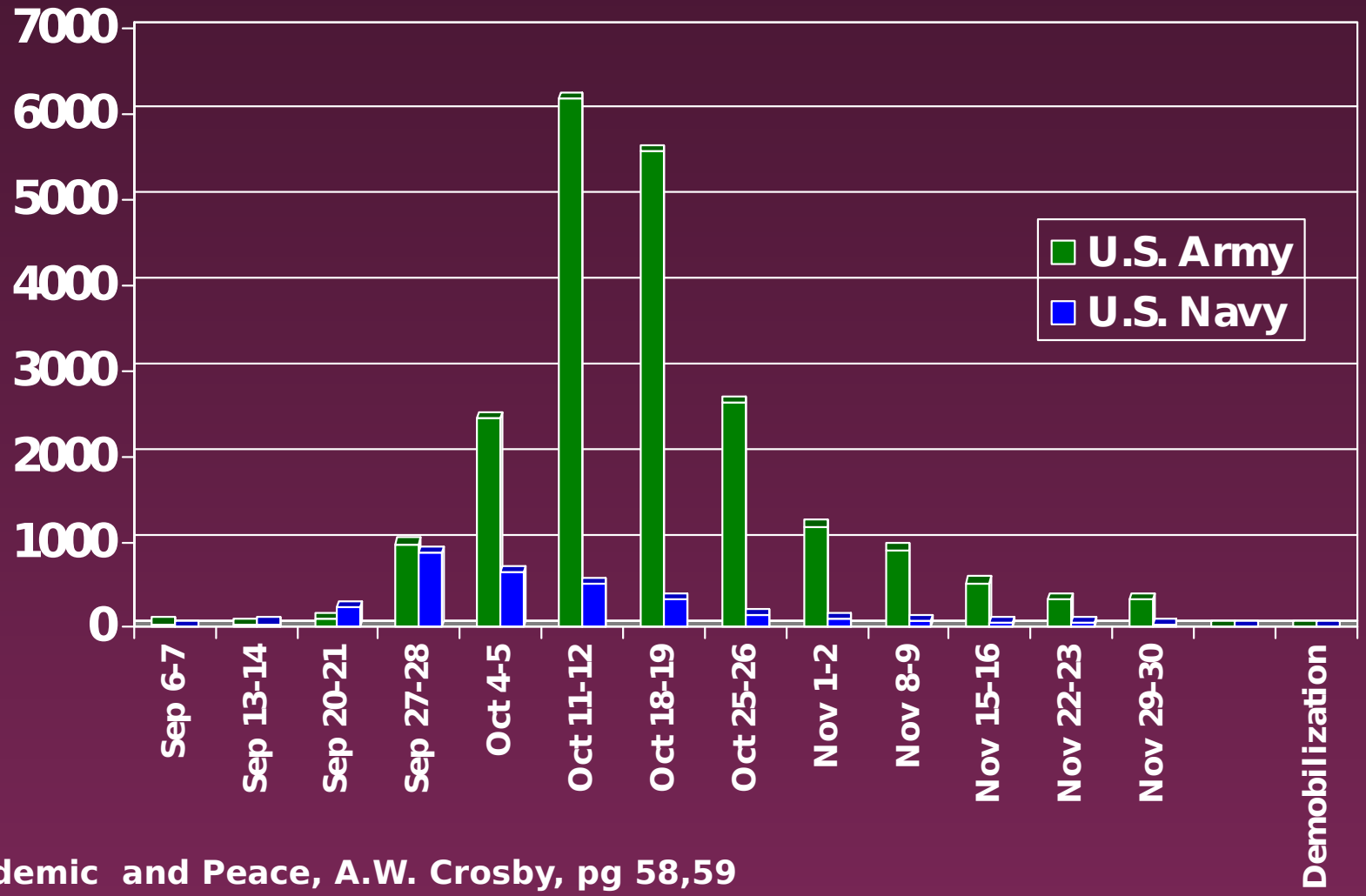


Erich von Ludendorff: The Leading World War I German G

“It was a grievous business,” wrote Germany’s leading general, Erich von Ludendorff, “having to listen every morning to the Chief of Staff’s recital of the number of influenza cases and their complaints about the weakness of their troops.”

A bit later he blamed the failure of his July offensive, which came so close to winning the

U.S. Army and Navy Deaths Due to Influenza and Pneumonia: Fall 1918



Source: Epidemic and Peace, A.W. Crosby, pg 58,59

Epidemiology and Bioterrorism

“The detection and control of saboteurs are the responsi
of the FBI, but the recognition of epidemics caused by sab
is particularly an epidemiologic function…. Therefore, any
defense against biological warfare sabotage requires trai
epidemiologists, alert to all possibilities and available for
at a moment’s notice anywhere in the country”

Alexander Langmuir
Founder of CDC EIS Program
1952

Presidential Decision Directive NSTC-7 June 1996

"I have determined that the national and international system of infectious disease surveillance, prevention, and response is inadequate to protect the health of United States citizens from emerging infectious diseases."

"The mission of the DoD will be expanded to include support of global surveillance, training, research, and response to emerging infectious disease threats."

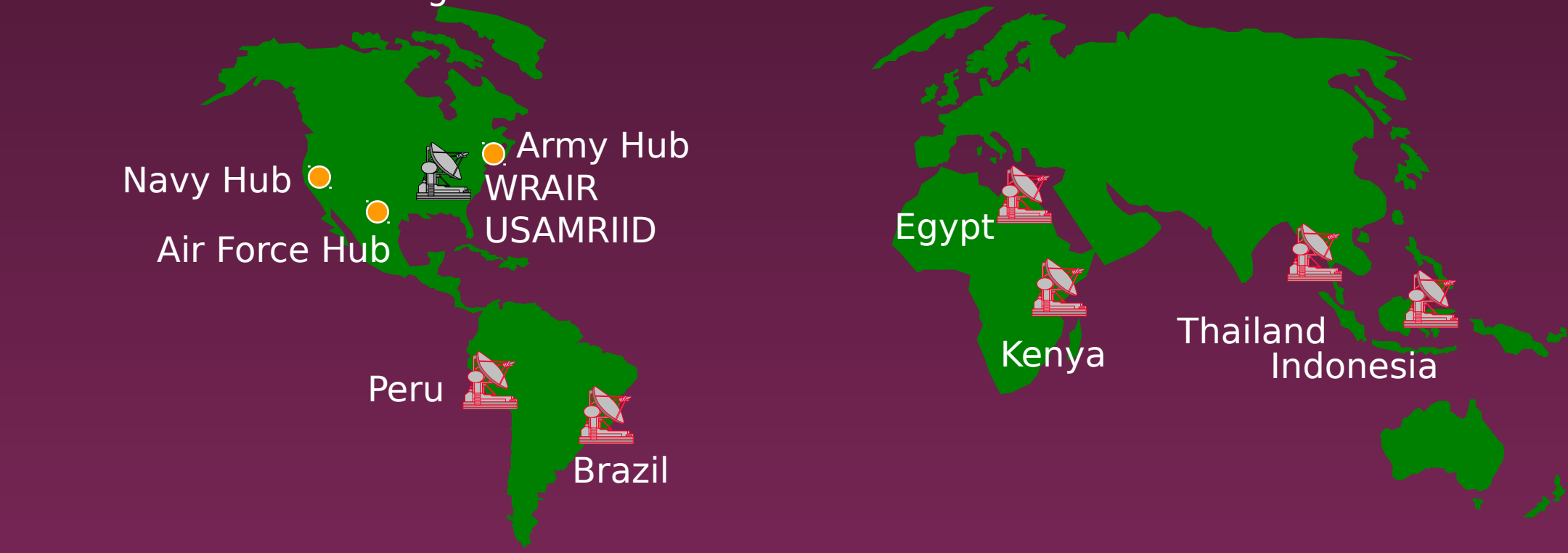
"DoD will strengthen its global disease reduction efforts through: centralized coordination; improved preventive health programs and epidemiological capabilities; and enhanced involvement with military treatment facilities and United States and overseas laboratories."

DoD Assets for Surveillance and Response: The Network of DoD Service Hubs and Overseas Medical Research Units

Service-Specific Surveillance Centers (DoD beneficiary focus)

OCONUS Medical Research Units (Non-beneficiary developing world focus)

Central Coordinating Hub



DoD Assets for EID Surveillance and Response

- Extensive Infectious Disease Expertise -
  - 700 persons stationed at DoD overseas labs
  - 800+ CONUS-based infectious disease scientists and support staff
- World-Wide State-of-the-Art Communications
  - Full Internet connectivity
  - Satellite communications from field
  - Telemedicine
  - GEIS Web Site
- Cutting Edge Field Diagnostic Reagents
- Special Drugs and Vaccines
- Globally Deployed Forces Under Medical Surveillance

Some Shortfalls in Emerging Infections Surveillance Capabilities for DoD Health Care Beneficiaries

- No timely epidemiologically focused mortality surveillance system
- Lack of at least a “virtual” DoD public health laboratory system
  - Needed to ensure that military public health questions are addressed in addition to patient care issues (e.g., serotyping to recognize outbreaks)
  - Currently uncoordinated resources and important diagnostic gaps
  - Current resources often not institutionalized and “personality dependent”
- Lack of a program of laboratory-based reporting of surveillance data
  - Essential to identify and track antibiotic resistance patterns
  - Could coupled with GIS help with the timely recognition of bioterrorism
  - Would help address insufficiently specific in- and outpatient diagnoses
  - Would address significant clinician-based under-reporting
  - Would raise DoD to the surveillance standard of practice followed by the 50 states in reporting laboratory data to the CDC

DoD-GEIS Goals & Objectives

A. To increase the capability to detect emerging infectious diseases by:

- *Improving existing morbidity surveillance systems (e.g., influenza)*
- *Instituting a DoD epidemiologic surveillance system for mortality*
- *Improving capture for surveillance purposes of clinical laboratory results*
- *Instituting standardized archiving for OCONUS R&D laboratory specimens*
- *Conducting standardized sentinel surveillance programs in overseas labs*
- *Enhancing EID training in DoD and other populations*
- *Improving dissemination of information regarding EID issues*

B. To increase the capability for timely assessment and response by identifying assets, enhancing capabilities, and coordinating their use.

C. To complement federal and international emerging infections efforts through coordination and partnerships with other agencies

Four-Fold Role of DoD Overseas Labs in the DoD Global Emerging Infections System

- Global Surveillance - Focused on drug-resistant malaria and enteric organisms, influenza, and hemorrhagic fevers
- Global Response - Permanent, multi-disciplinary platforms for staging field, laboratory, human, and veterinary health investigations
- Applied Research - Established focus on diagnosis, prevention, and treatment of regionally unique and more global infections
- Building Global Capacity - Regional hubs as focal points for leveraging local capacity through training and infrastructure building

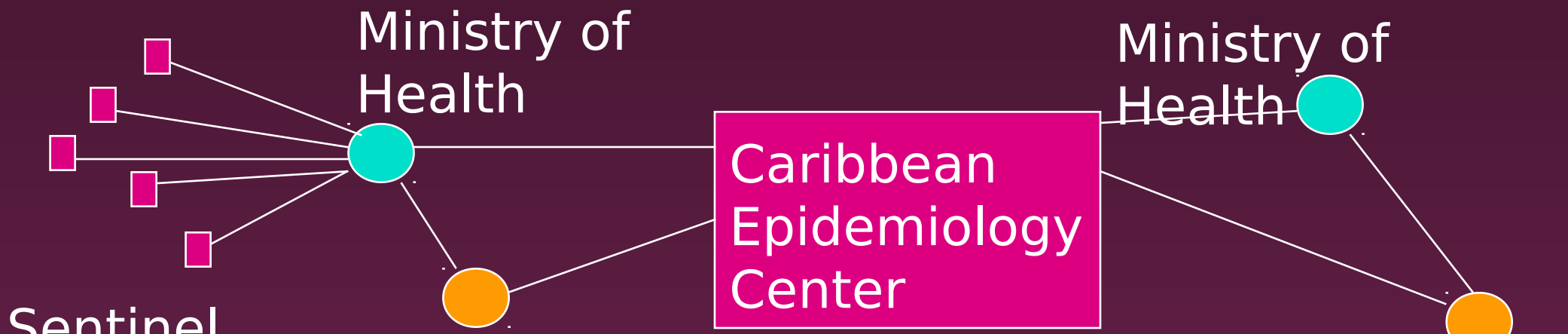
Training of Foreign Personnel within the DoD Emerging Infections Surveillance Program

- Leverages DoD resources and builds key regional collaborations
- Transfers epidemiologic and microbiologic skills
- Facilitates timely recognition and collaboration in outbreak control
- Facilitates replication of uniform surveillance procedures
- Strengthens internal, DoD, host nation, and regional infrastructure (Perry's Doctrine of Preventive Defense)

Presidential Decision Directive NSTC-7: Objectives

- Expand missions and authority of US agencies
- Collaborate to establish a global surveillance based on regional hubs linked by modern communications
- Ensure availability of drugs, vaccines, and assays
- Strengthen domestic infectious disease surveillance and response
- Strengthen research into diagnostics, treatment and prevention
- Promote public awareness

Flow Chart of SOUTHCOM/ACOM Caribbean Surveillance Infrastructure Project



Jamaica
Dominican Republic
Dominica
Barbados
Trinidad
St. Lucia
Suriname

Expansion Sites

Belize
Haiti
St. Vincent
Grenada
Guyana
Bahamas
Antigua
St. Kitts

Objectives of the Caribbean Humanitarian Assistance Surveillance Project

- To provide standard infrastructure for regional surveillance
- To improve communication through e-mail, faxing, and Internet access
- To initiate electronic surveillance for several discrete infectious diseases using PHLIS
- To serve as a model for future surveillance efforts

Military Readiness and National Security : Emerging Infections Surveillance and Response Adds Value

- Improves medical threat assessments
- Enhances control of pandemic influenza and drug-resistant organisms
- Identifies relatively untreatable infectious threats to troops
- Helps prevent epidemics during mobilization and training
- Helps prevent destabilizing effects on foreign governments
- Reduces post-deployment EID importations (esp. nosocomial spread)
- Reduces demand for costly humanitarian assistance
- Validates the effectiveness of preventive measures
- Enhances recognition of biological warfare and terrorism